OIPE JC141
AUG 15 2005
PATENT & TRADEMARK OFFICE

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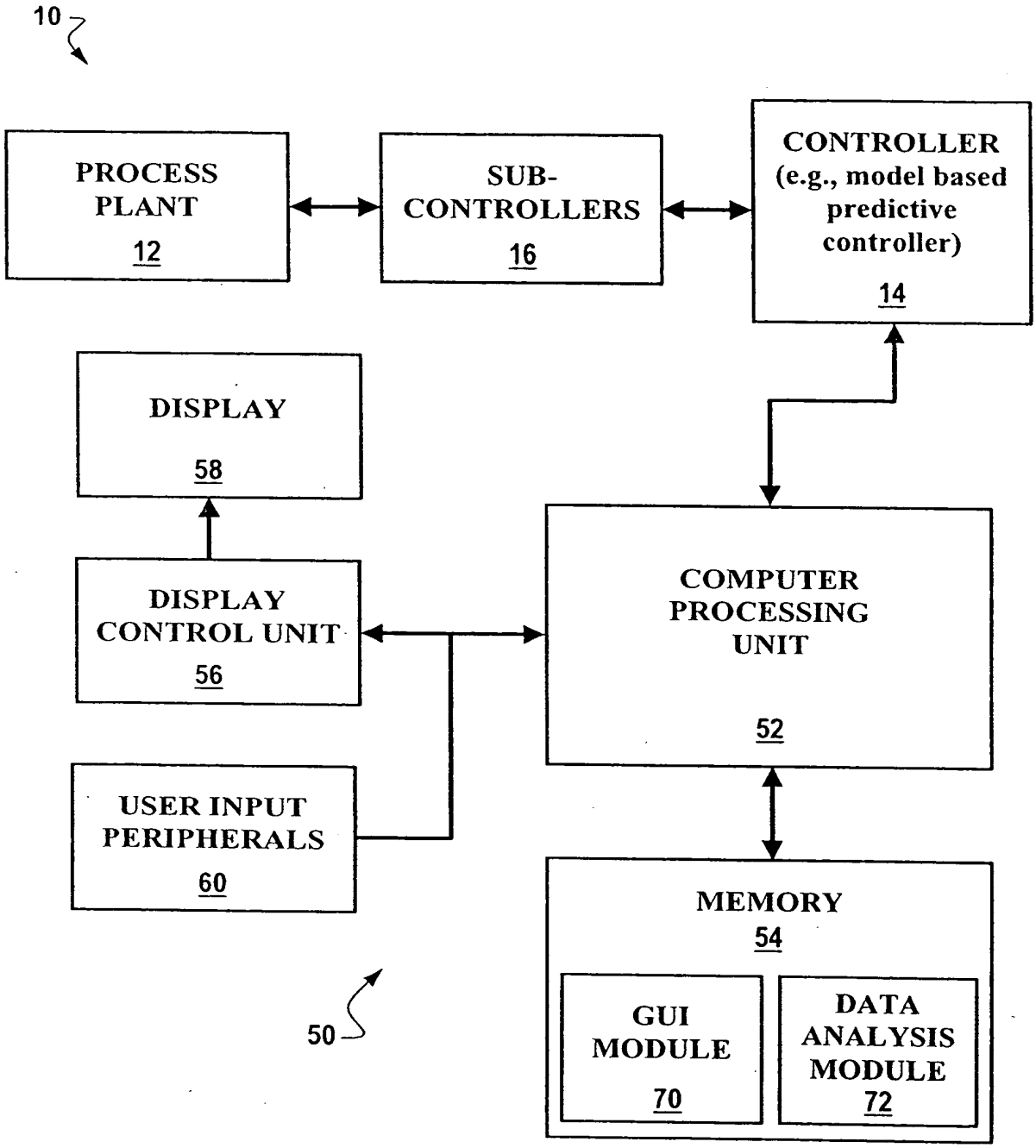

Figure 1

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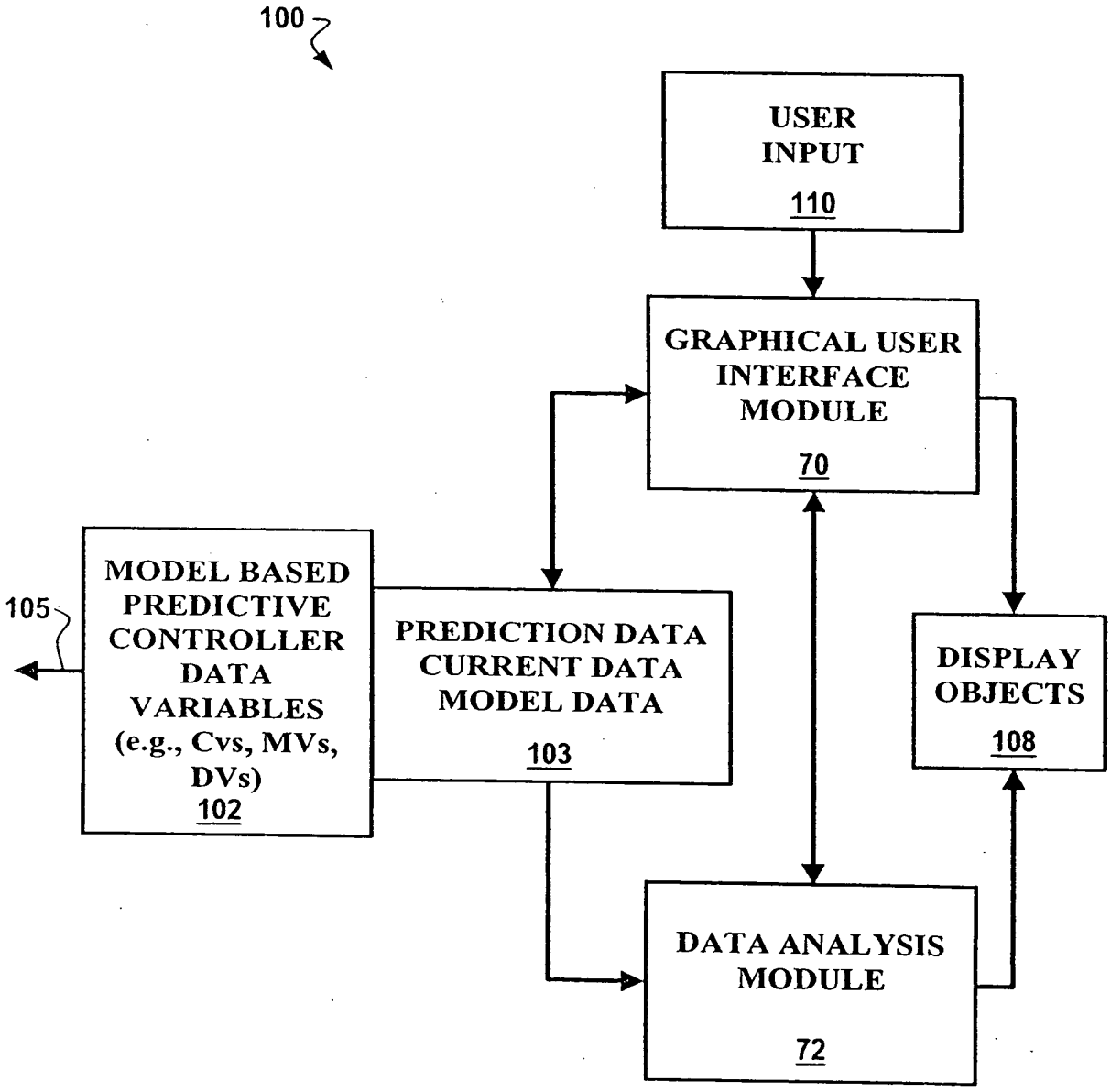
100
USER INPUT
110
GRAPHICAL USER INTERFACE MODULE
70
MODEL BASED PREDICTIVE CONTROLLER DATA VARIABLES (e.g., Cvs, MVs, DVs)
102
105
PREDICTION DATA CURRENT DATA MODEL DATA
103
DISPLAY OBJECTS
108
DATA ANALYSIS MODULE
72

Figure 2

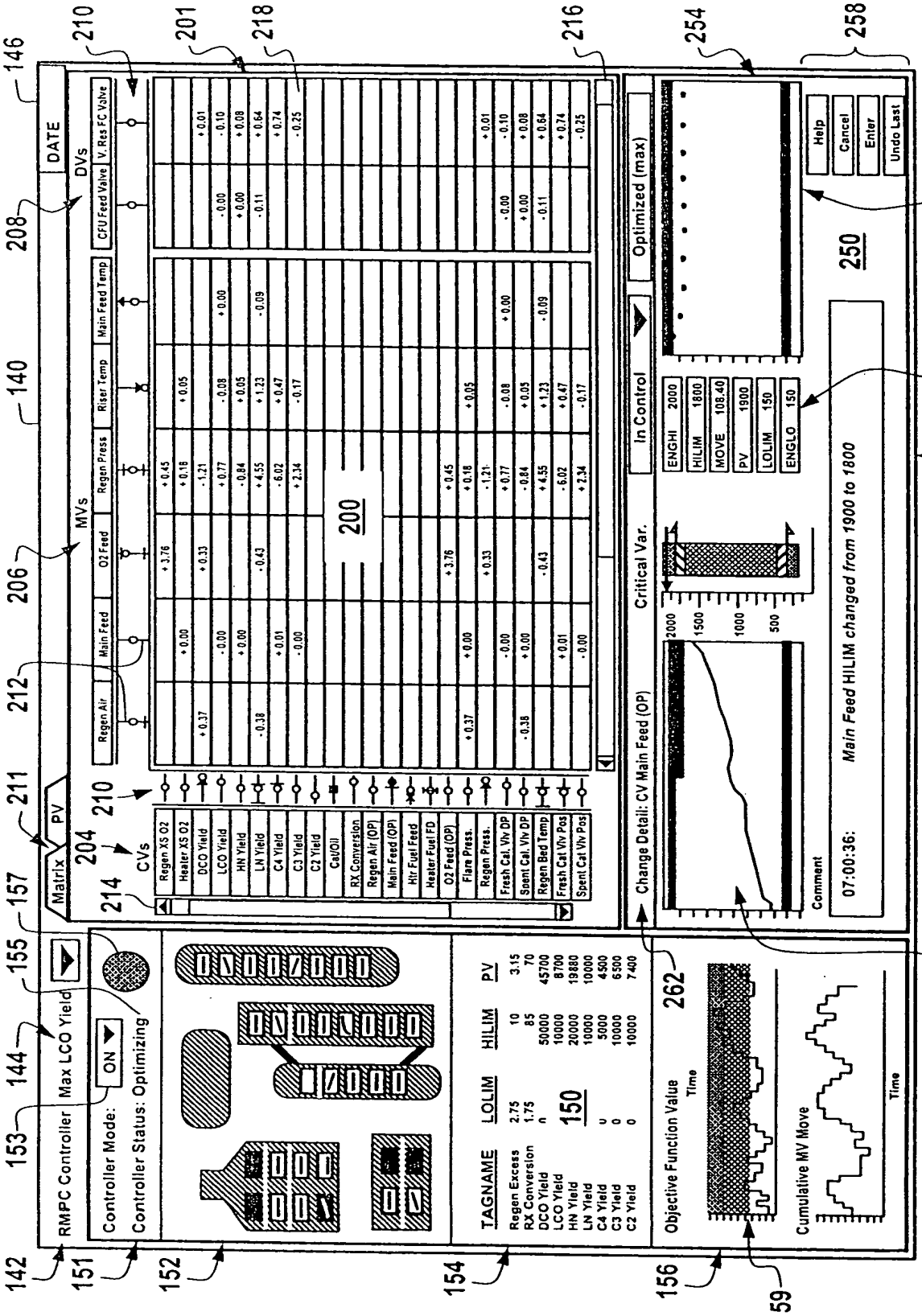
RMPC Controller
Max LCO Yield
Controller Mode: ON
Controller Status: Optimizing
Matrix
PV
MVs
DVs
CVs
DATE
Regen Air
Main Feed
O2 Feed
Regen Press
Riser Temp
Main Feed Temp
CFU Feed Valve
V. Res FC Valve
Regen XS O2
Heater XS O2
DCO Yield
LCO Yield
HN Yield
LN Yield
C4 Yield
C3 Yield
C2 Yield
Cat/Oil
RX Conversion
Regen Air (OP)
Main Feed (OP)
Htr Fuel Feed
Heater Fuel FD
O2 Feed (OP)
Flare Press.
Regen Press.
Fresh Cat. Vlv DP
Spent Cat. Vlv DP
Regen Bed Temp
Fresh Cat Vlv Pos
Spent Cat Vlv Pos
200
Optimized (max)
In Control
Critical Var.
Change Detail: CV Main Feed (OP)
ENGHI 2000
HILIM 1800
MOVE 108.40
PV 1900
LOLIM 150
ENGLO 150
Help
Cancel
Enter
Undo Last
Comment
07:00:36: Main Feed HILIM changed from 1900 to 1800
250
TAGNAME LOLIM HILIM PV
Regen Excess 2.75 10 3.15
RX Conversion 1.75 85 70
DCO Yield n 50000 45700
LCO Yield 150 10000 8700
HN Yield 20000 19880
LN Yield u 10000 10000
C4 Yield 5000 4500
C3 Yield 0 10000 6500
C2 Yield 0 10000 7400
Objective Function Value
Time
Cumulative MV Move
Time
142
151
152
154
156
159
252
260
256
254
258
146
210
201
218
216
208
206
140
212
211
157
155
144
153
204
214

Figure 3

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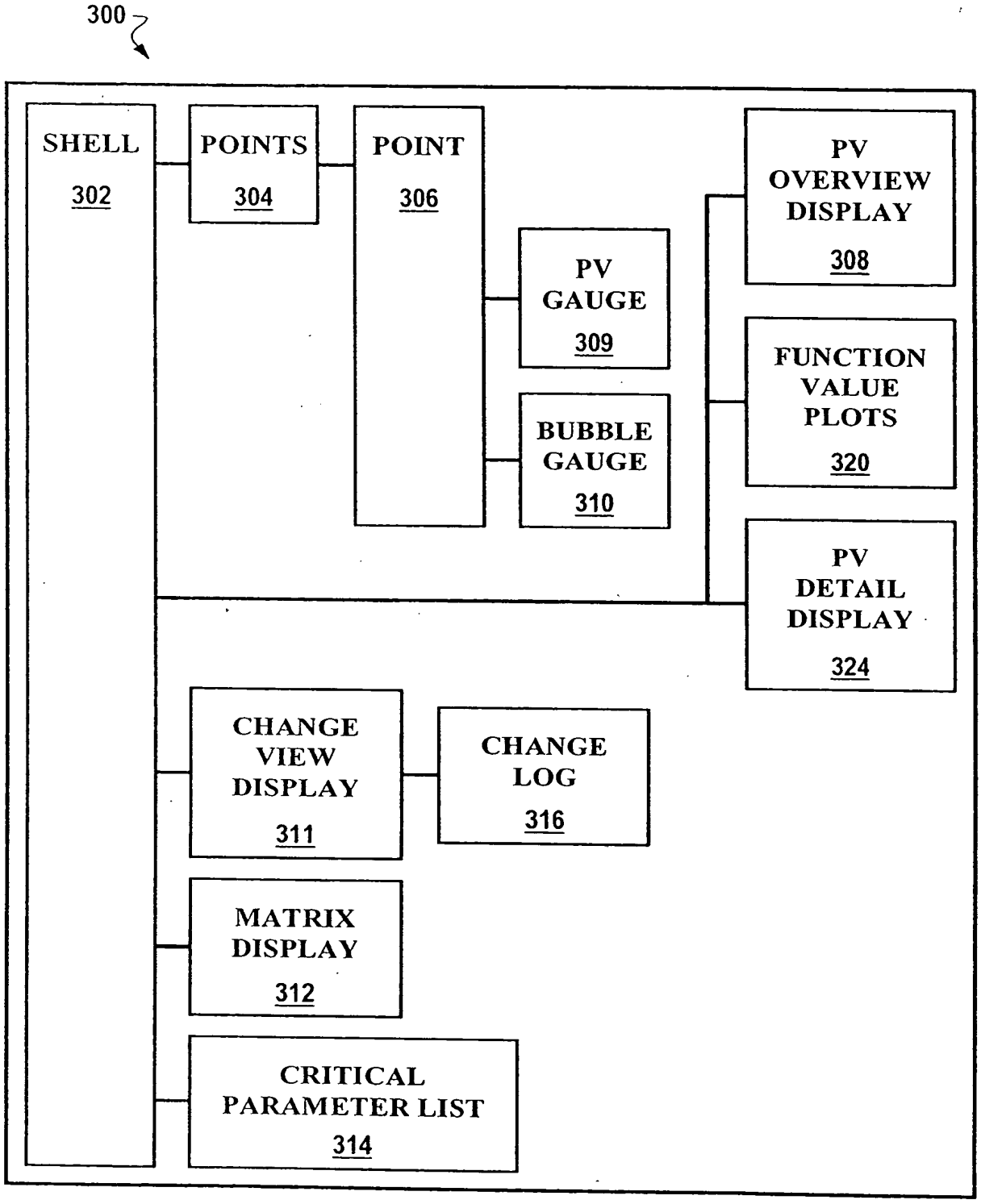
300
SHELL
302
POINTS
304
POINT
306
PV GAUGE
309
BUBBLE GAUGE
310
PV OVERVIEW DISPLAY
308
FUNCTION VALUE PLOTS
320
PV DETAIL DISPLAY
324
CHANGE VIEW DISPLAY
311
CHANGE LOG
316
MATRIX DISPLAY
312
CRITICAL PARAMETER LIST
314

Figure 4

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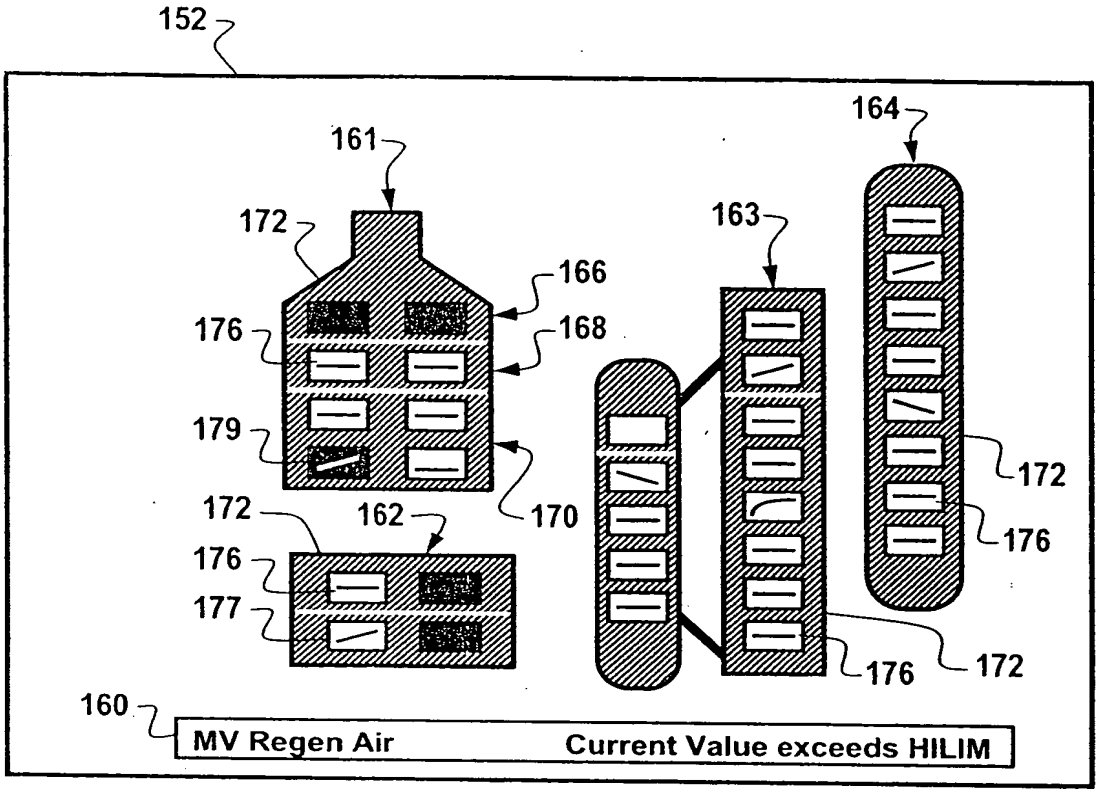

Figure 5A

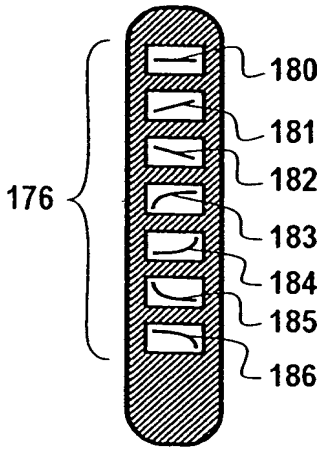

Figure 5B

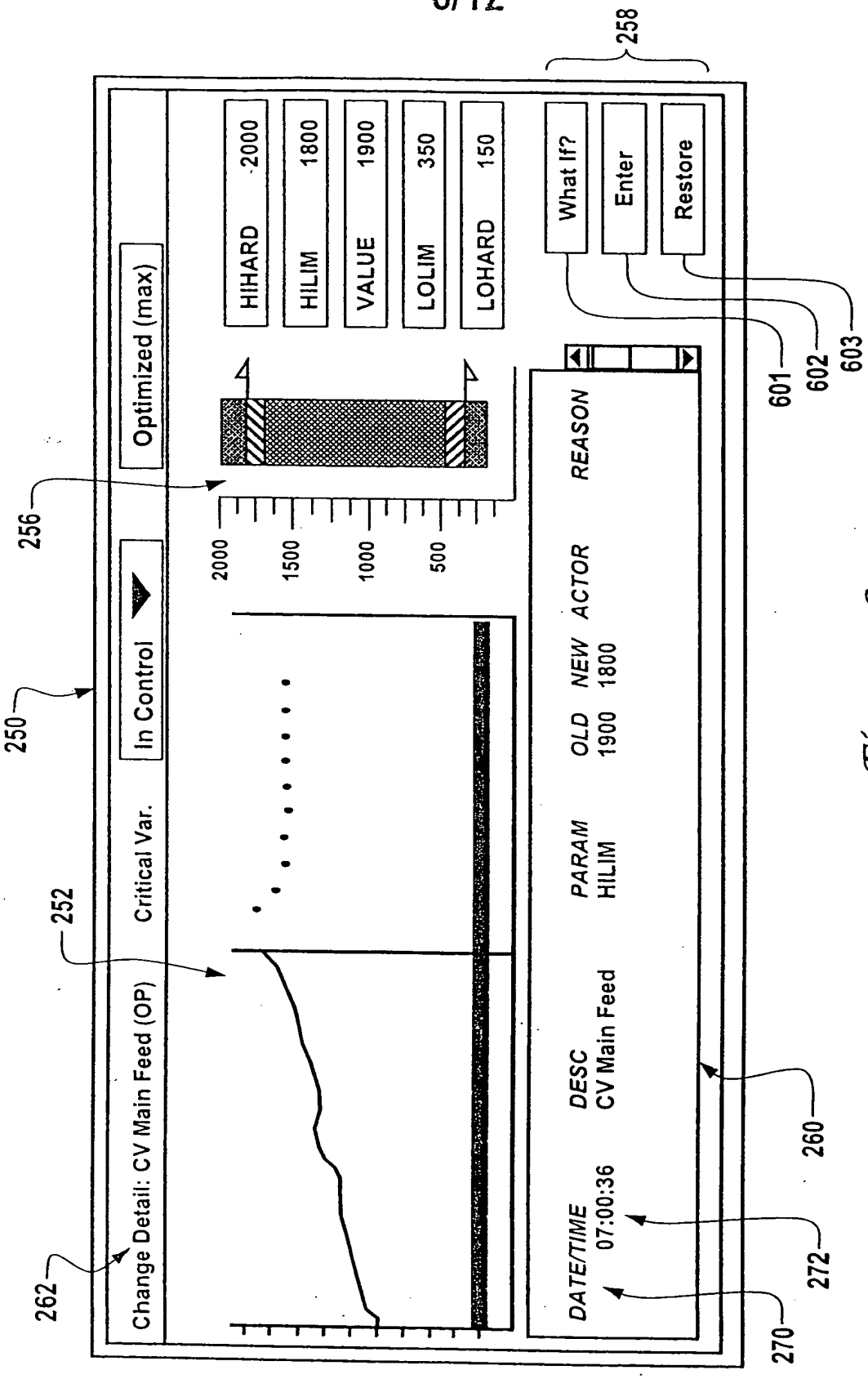
258
HIHARD 2000
HILIM 1800
VALUE 1900
LOLIM 350
LOHARD 150
What If?
Enter
Restore
601
602
603
Optimized (max)
In Control
Critical Var.
Change Detail: CV Main Feed (OP)
256
250
252
262
2000
1500
1000
500
REASON
ACTOR
NEW 1800
OLD 1900
PARAM HILIM
DESC CV Main Feed
DATE/TIME 07:00:36
260
272
270

Figure 6

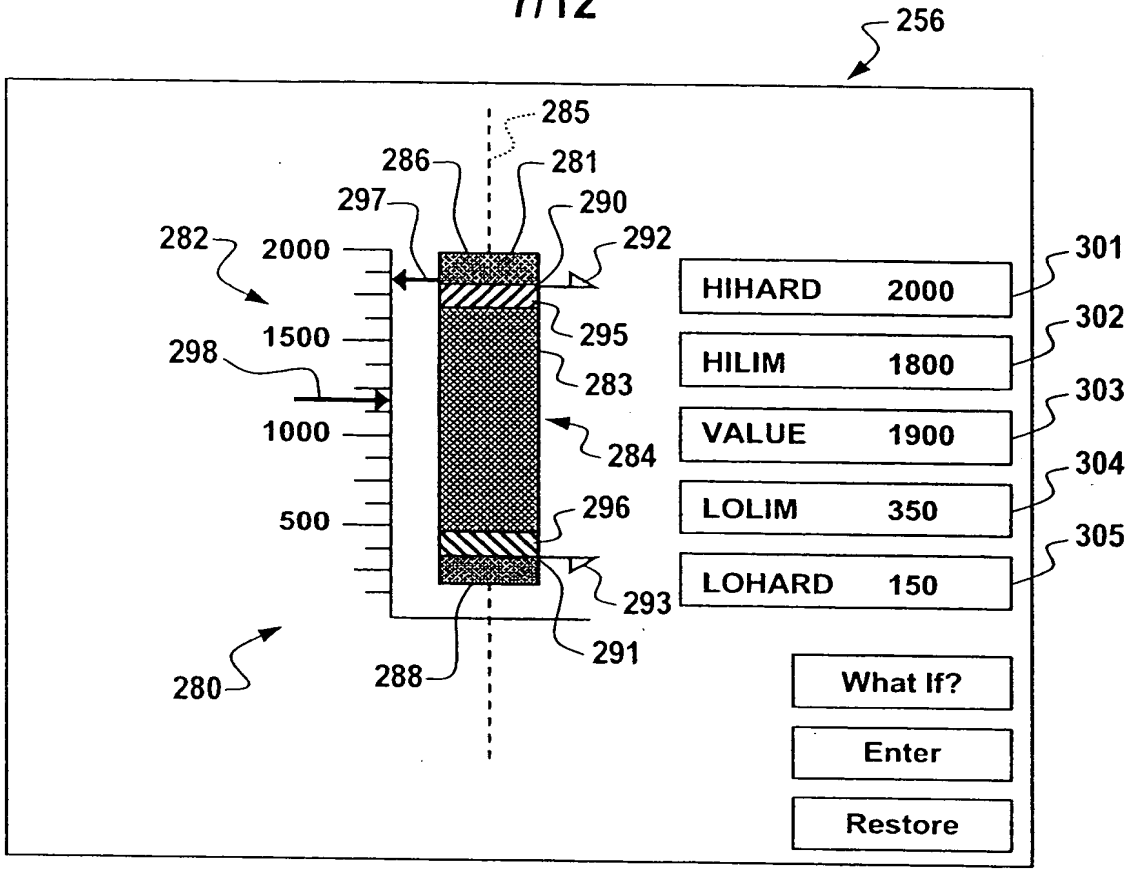

Figure 7A

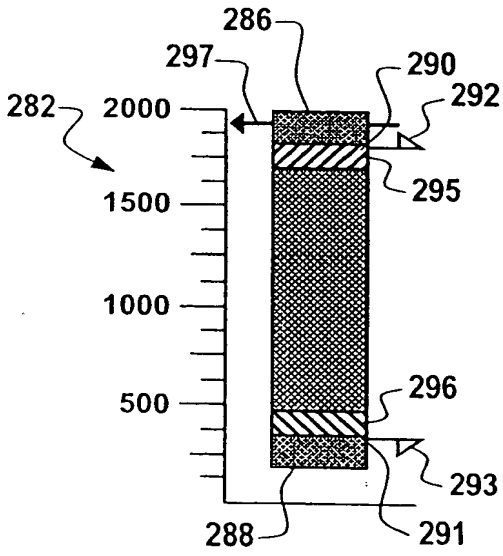

Figure 7B

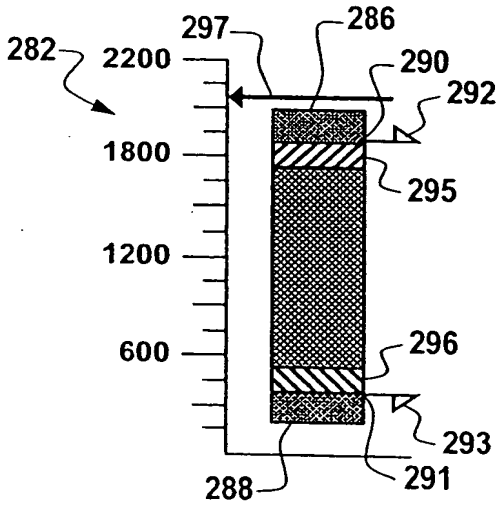

Figure 7C

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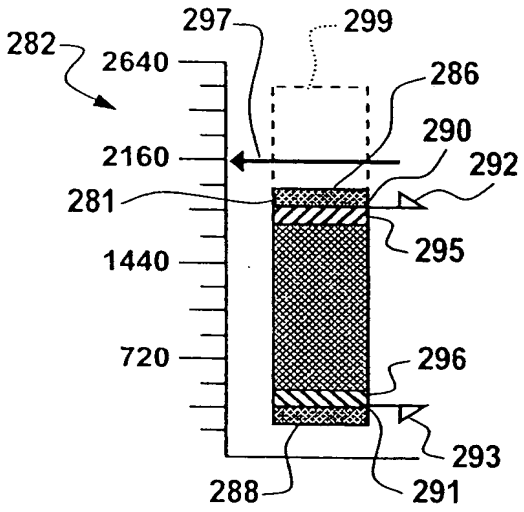

Figure 7D

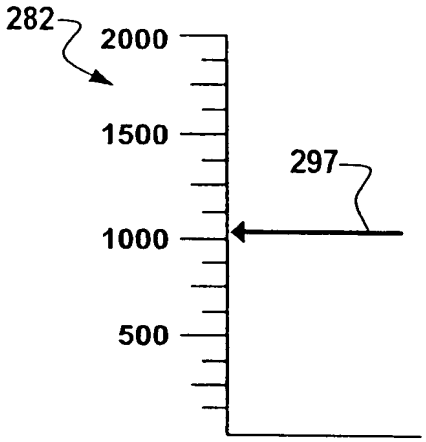

Figure 7E

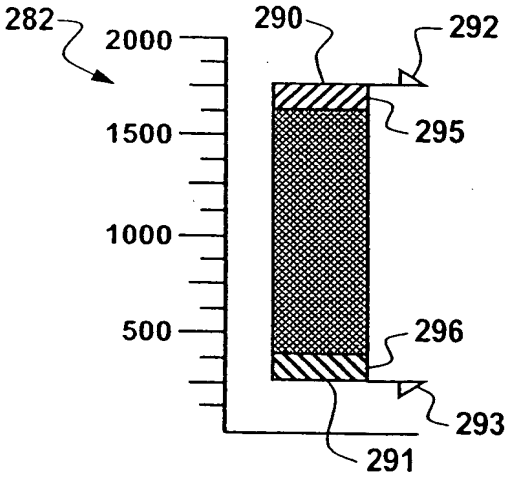

Figure 7F

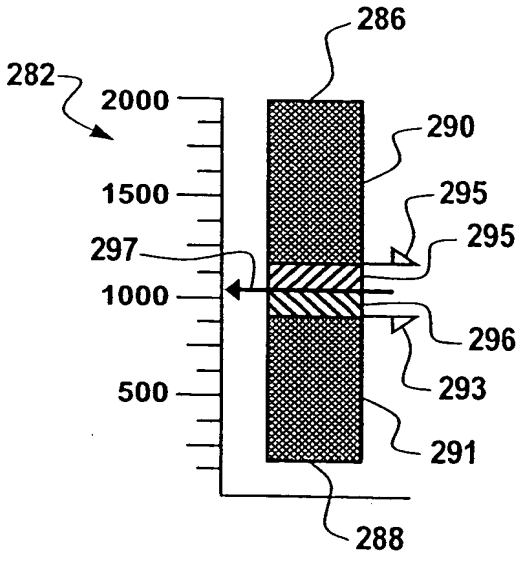

Figure 7G

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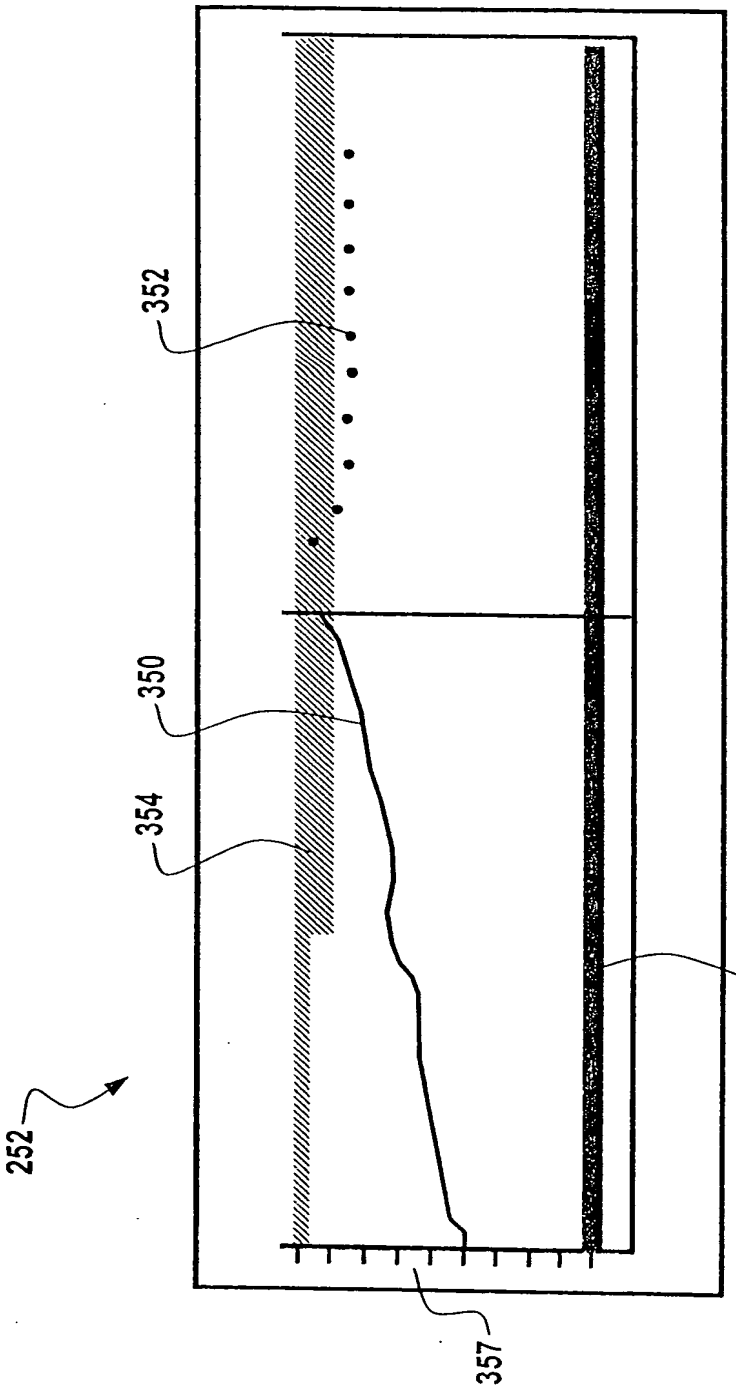

Figure 8

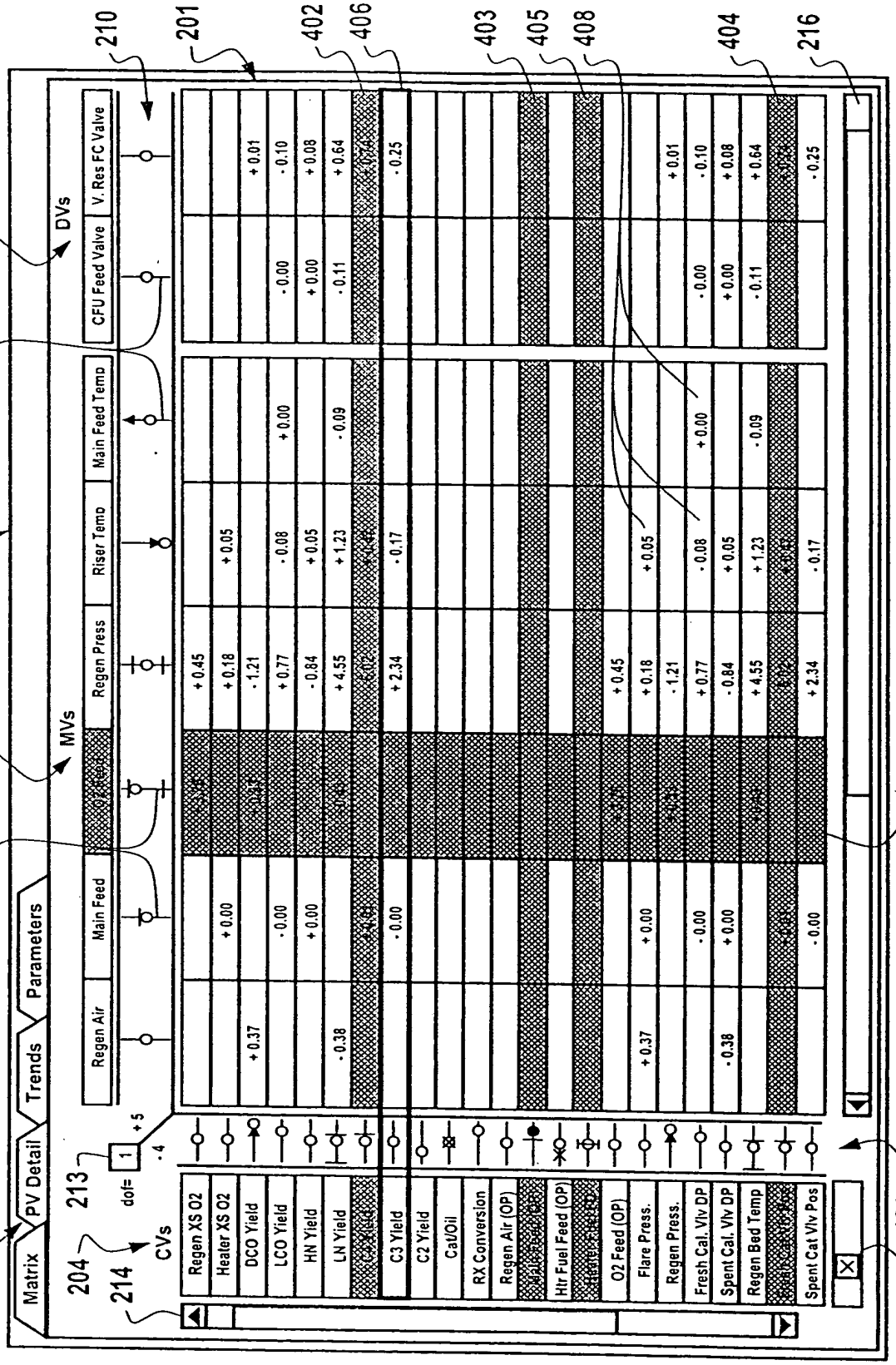
Matrix
PV Detail
Trends
Parameters
MVs
DVs
CVs
Regen Air
Main Feed
Regen Press
Riser Temp
Main Feed Temp
CFU Feed Valve
V. Res FC Valve
Regen XS O2
Heater XS O2
DCO Yield
LCO Yield
HN Yield
LN Yield
C3 Yield
C2 Yield
Cat/Oil
RX Conversion
Regen Air (OP)
Htr Fuel Feed (OP)
O2 Feed (OP)
Flare Press.
Regen Press.
Fresh Cat. Vlv DP
Spent Cat. Vlv DP
Regen Bed Temp
Spent Cat Vlv Pos
200
201
202
203
204
205
206
208
210
211
212
213
214
216
400
402
403
404
405
406
408
421

Figure 9

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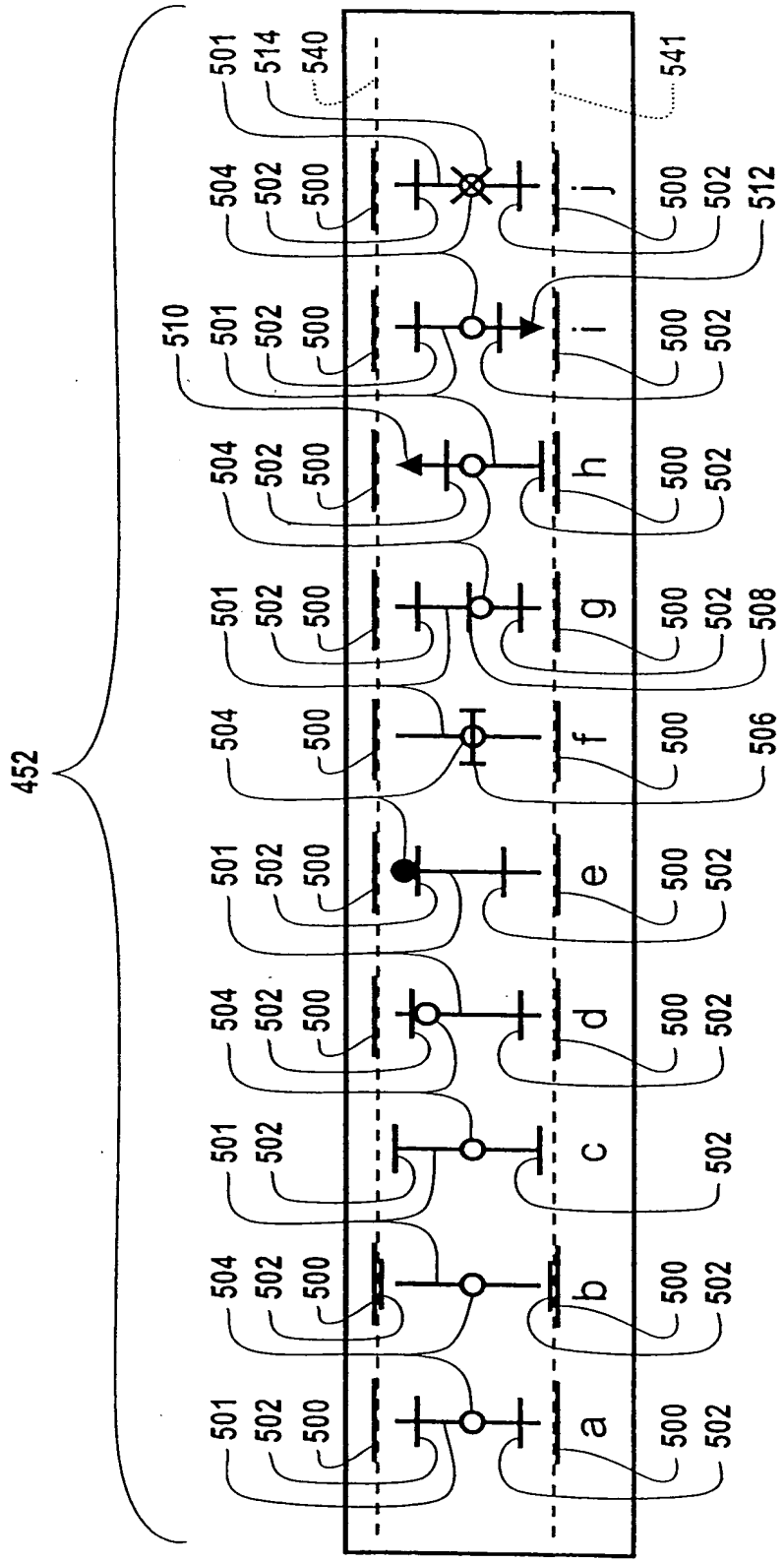

Figure 10

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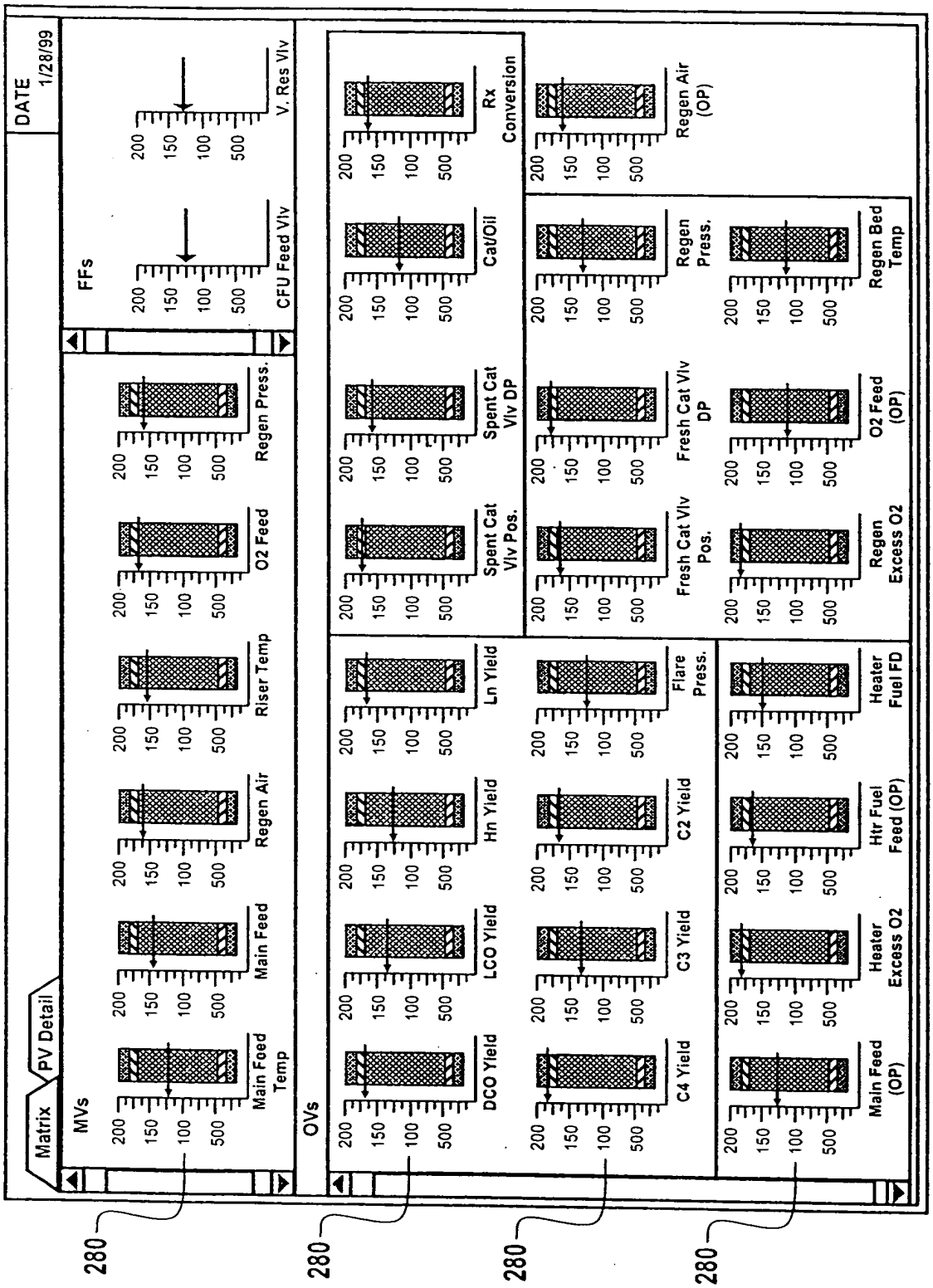

Figure 11

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